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(71)Applicant : KAWASHIMA TEXTILE MANUF LTD

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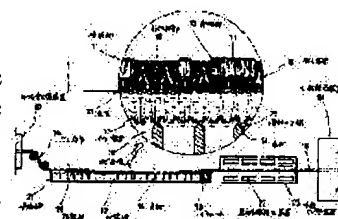
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(54) PRINT DYEING FOR PILE FABRIC

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a pile fabric which is printed with a pattern of fast and bright colors by allowing the pile fabric to move on the surface of the base dyeing solution without sinking and to exude the base dyeing solution to the unprinted parts.

SOLUTION: A dye-proof sizing agent 11 containing a water-repellent agent is printed on a polyester pile fabric such as moquette 16 and heat-treated. Then, the fabric 16 is guided to the dyeing tank 21 containing a ground dye solution 12, as the pile face is upturned. The pile fabric is supported with a plurality of the supporting materials 14 below the liquid level 13 so that the fabric may not sink whereby the base dye solution 12 is exuded to the top end of the unprinted part 18 of the pile. Then the pile fabric 16 is brought into contact with vacuum nozzle 19 and pulled up from the dye solution tank 21, as the solution is removed by sucking. Then, the fabric is introduced into the preheating chamber 23 equipped with a far infrared ray generator 22 for preheating then heating in the color-developer to develop the color, subsequently washed, removed the sizing agent, washed with water and dried.



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* NOTICES *

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to textile printing of pile textiles, such as a pile textile, moquette, cloth edited by the double RASSHIERU pile, Wilton, and a tough TEDDO pile textile.

[0002]

[Description of the Prior Art] Textile printing of a pile textile is performed by extruding and printing printing paste from a textile-printing screen on a pile front face (skiing JINGU), or injecting dye liquor from a nozzle.

[0003] Since the printing paste printed to the pile textile by which a front face is constituted from a fluff since printing paste could not permeate the fluffy textile easily does not permeate a pile layer not much deeply but a pile root remains, without being colored printing paste, when a pile textile is bent, the pile root which is not colored [the] will be exposed between piles, and will spoil the fine sight on the front face of a pile.

[0004] Although a pile layer is deeply permeated in spray textile printing performed by injecting dye liquor from a nozzle since dye liquor is prepared by whether it is ** at low ** as compared with printing paste If a nozzle is turned to the crack between the piles and piles which are made by in addition still being turned up in a guide roll etc. and dye liquor is not injected The dye liquor printed although dye liquor was prepared by low ** in order to make it easy for it to be difficult to color until it results in a pile root, and to permeate therefore cannot ooze out from in the mold case, a textile-printing pattern cannot become indistinct, and the mold time cannot describe a sharp and complicated delicate textile-printing pattern.

[0005]

[Problem(s) to be Solved by the Invention] Then, when it bends, in order to make it not conspicuous [the pile root which appears from the crack between piles], the method of coloring a pile root the ground color of a textile-printing pattern is taken. The colored-discharge-printing method colored necessary color by the nondischargeable color is well-known at the same time the whole prints the discharge paste which blended the discharging agent and the nondischargeable color with the pile textile colored the ground color and decolorizes the ground color on the front face of a pile by the discharging agent beforehand as the one method. However, by restricting the kind of nondischargeable color which can be used, necessary color and especially the thing expressing the color of a pastel color tone are difficult by colored discharge printing, muddiness arises in a hue, and a discharging agent spoils the physical properties of fiber, or causes the corrosion of a dyeing facility, and has a problem also on an operator's health care.

[0006] Moreover, the reserve style which is flooded with ground dyeing liquid in the pile textile which printed the resist-printing paste which blended the resist as other methods, colors by the color which blended the pile front face with the resist-printing paste, and colors only the pile root to which a resist-printing paste has not adhered with ground dyeing liquid is well-known. However, although resist

printing of the print part of a resist-printing paste is carried out so that ground dyeing liquid may not enter, since a resist-printing paste cannot permeate a pile layer easily in the fluffy pile textile, either It cannot wrap [every / of the pile fiber of a print part] in completely by the coat of a resist-printing paste, a part of pile fiber which is not wrapped in the coat of a resist-printing paste is colored ground dyeing liquid, consequently a textile-printing pattern with a resist-printing paste is polluted by ground dyeing liquid, muddiness arises in a hue, and it will become indistinct.

[0007] And although a resist-printing paste will be further printed after performing ready hair processing in which the lie of hair on the front face of a pile is arranged in order to make the mold time of a textile-printing pattern sharp In the dyeing which is flooded with ground dyeing liquid and performs a pile textile Although physical irritation, such as rubbing a pile textile in **** by return [be / nothing / with how often / in ground dyeing liquid and], will be compulsorily added in order to drive out the foam made in the interior of a pile textile (between fiber) by being surrounded by ground dyeing liquid and to make ground dyeing liquid permeate the interior of a pile textile uniformly, when immersed Since it must stop having to perform again ready hair processing in which the lie of hair is rearranged after dyeing when it does so, you have to stop having to perform ready hair processing 2 times print before and after dyeing.

[0008]

[Objects of the Invention] Then, without [without it overlaps before and after a print and performs twice ready hair processing in which the lie of hair on the front face of a pile is arranged, and] polluting a textile-printing pattern with a resist-printing paste, this invention performs ground dyeing, colors a pile root the ground color of a textile-printing pattern, and a fine sight is not spoiled by the color of the pile root which appears from the crack between piles while in use, but a textile-printing pattern colors it skillfully, and it aims at obtaining a strong textile-printing pile textile.

[0009]

[Means for Solving the Problem] Pile textile textile printing concerning this invention is characterized by putting the pile textile 16 on the oil level 13 of ground dyeing liquid, and making ground dyeing liquid ooze out to the nose of cam of the pile of the non-printing section 18 with which printing paste is not printed, without turning to the bottom the pile front face which printed the printing paste 11 which blended the water repellent, and sinking a pile front face into the bottom of the oil level of ground dyeing liquid 12.

[0010] If the pile textile 16 is put on the oil level 13 of ground dyeing liquid, ground dyeing liquid 12 will ooze out to a pile nose of cam by capillarity. Although the pile front face of the non-printing section 18 is dyed a ground color, in the print section 15 which printed the resist-printing paste Although the pile root is dyed a ground color, it is obstructed by the water-repellent force which the resist-printing paste 11 has, and ground dyeing liquid 12 does not go up on a pile front face. The pile root 17 and the pile front face of the non-printing section 18 will be dyed ground dyeing liquid 12, without the pile front face of the print section 15 completely being polluted by ground dyeing liquid 12.

[0011] thus, the ground dyeing of the pile front face of the non-printing section 18 is made to be carried out to ground dyeing liquid -- being alike -- it is good to put the pile textile 16 on the oil level 13 of ground dyeing liquid so that the pile root 17 may sink in ground dyeing liquid 12 until the oil level 13 of ground dyeing liquid arrives at the position which fell by 1-3mm from the pile front face For example, pile length sinks the pile root 17 into the bottom of an oil level 13 1-3mm with 2-5mm moquette or the cloth edited by the double RASSHIERU pile.

[0012] Thus, in order to sink the pile root 17 into ground dyeing liquid 12 by necessary Mr. Fukashi, it is good to make it support in ground dyeing liquid so that a strut 14 may be arranged under the oil level of ground dyeing liquid and a pile front face may not sink in the bottom of an oil level. Therefore, the 2nd feature of this invention is to support the pile textile 16 and prevent sedimentation down to the oil level on the front face of a pile with the strut 14 formed in the bottom of the oil level of ground dyeing liquid. For that purpose, it is good to make it support in the position whose strut 14 supplied ground dyeing liquid automatically so that a strut 14 might sink 1-5mm under an oil level, or was depressed 1-5mm under the oil level with buoyancy.

[0013] Since the upper limit of the pile of the non-printing section 18 is in the open state which is not closed by ground-dyeing liquid 12 and in which aeration is possible in process in which make it such and ground-dyeing liquid goes up by capillarity, uneven dyeing which produces with the foam which will be extruded by the ground-dyeing liquid 12 going up, and is made by the air contained between the pile fiber being surrounded by ground-dyeing liquid inside a pile textile (between fiber) in dyeing does not produce. So, in this invention, ground dyeing is carried out without not adding physical irritation for making ground dyeing liquid permeate the interior of a pile textile uniformly like [in the case of dyeing] to a pile textile, consequently disturbing the lie of hair on the front face of a pile, and exceptional ready hair processing is not needed after ground dyeing.

[0014] Of course, for that, heating coloring processing of the pile textile to which ground dyeing liquid was given is carried out, turning a pile front face upwards. In this case, the ground dyeing which a pile textile is heated from the interior, considering the property of far infrared rays, therefore will not produce uneven dyeing by the migration phenomenon which the ground dyeing liquid inside a pile textile moves to the front reverse side, but ground dyeing liquid will color uniformly like [in the case of carrying out applying hot blast etc. and heating from the front reverse side] if far infrared rays are irradiated at a pile textile, and does not have uneven dyeing becomes possible. Therefore, the 3rd feature of this invention is to irradiate far infrared rays and heat them to the pile textile 16 which turned the pile front face to the bottom and was pulled up from ground dyeing liquid 12.

[0015] Moreover, the 4th feature of this invention is to apply the vacuum nozzle 19 to the rear face of a pile textile, while pulling up from ground dyeing liquid such and irradiating far infrared rays, by doing so, it can lose **** of superfluous ground dyeing liquid, can adjust the suction force of the vacuum nozzle 19, and can make coating weight (the amount of pickup) of ground dyeing liquid necessary coating weight. What is necessary is just to set up the coating weight of ground dyeing liquid in the range of 70 - 170% of pickup generally. After it irradiates far infrared rays and they carry out preheating, according to a conventional method, the coloring processing by dry heat or wet heat is performed and dried [rinse / depasting / and], and is finished. In the process, a water repellent is removed with the water soluble resin (stock paste) contained in printing paste. What is necessary is to perform coloring processing by the thermosol process for 3 - 5 minutes in 165-185-degree C hot blast, and for a 160-180-degree C steamer just to perform coloring processing by the steaming method for 8 - 20 minutes. Reduction cleaning after coloring processing is performed before and after 80 degrees C.

[0016]

[Embodiments of the Invention] Printing paste adds a color to a stock paste according to a conventional method, adds a water repellent further, and is prepared. The commercial emulsion type elegance which distributed water for paraffin, a wax, silicon resin, fluororesin, etc. with the emulsifier can be used for a water repellent. In this case, when using the silicon resin system water repellent and fluororesin system water repellent which need heat-treatment, after heating the printing paste printed at the temperature below the coloring temperature of the color contained in printing paste in temperature required for making a water repellent demonstrate a water-repellent effect and making it dry, a pile textile is set on the oil level of ground dyeing liquid. What is necessary is just to perform the heating by 135-145-degree C hot blast.

[0017] Drawing 1 illustrated the ground dyeing equipment of this invention, and is located in a line in order of a print and the dryer 20 of printing paste, the dye liquor tub 21 which stored ground dyeing liquid, a vacuum device 19, the preheating equipment 23 which has arranged far-infrared equipment 22 up and down, and heating coloring equipment (steamer) 24. A rotary-screen printing machine, a flat screen-printing machine, a roller-printing machine, etc. are used for the print of printing paste. The crosspiece 14 of a longwise cross section is horizontally arranged in a dye liquor tub at the fixed interval. Ground dyeing liquid is automatically supplied to the dye liquor tub 21 so that the upper limit 25 of a crosspiece may sink 2-3mm from an oil level 13, and with a self-weight, the pile textile 16 which passes through the dye liquor tub 21 top sinks from a pile front face to a depth of 1-2mm, and is supported to a crosspiece 14. 26 is a baffle. The contact time of the pile textile 16 and ground dyeing

liquid 12's, i.e., time to sink the pile root 17 into the bottom of an oil level, is based on the bearer rate of the pile textile 16, and also it can move a baffle 26, and can also change and adjust the distance of a baffle 26 and a vacuum 19.

[0018] In drawing 1, although the oil level 13 of the ground dyeing liquid on which the crosspiece put in order horizontally constitutes the strut 14 which regulates the depth whose pile textile is depressed, and puts a pile textile is level, it can also use the base and marginal material of a dye liquor tub as a strut, and its oil level may be three-dimensional.

[0019] Drawing 2 illustrates the dye liquor tub which had a bottom plate 27 and constituted the strut (14), and many source mouths 28 which gush the ground dyeing liquid 12 sent from the dye liquor supply pipe 31 are formed in the bottom plate 27, and as shown in an air table, the pile textile 16 moves so that it may have floated in the ground dyeing liquid 12 which gushes from the source mouth 28 and may slide on a base. In such a dye liquor tub, if a base is made to incline, a pile textile will move so that it may slide on the oil level of the ground dyeing liquid which inclines and flows.

[0020] The dye liquor tub illustrated to drawing 3 is divided into the several division drawing by the sheathing board 29 which is several sheets from which height differs, and its pile root 17 is depressed to the bottom of the oil level 13 exceeding each sheathing board 29, and a pile textile is supported to a sheathing board 29, and passes the dye liquor tub 21 while it touches the oil level of each partition.

[0021] In the dye liquor tub illustrated to drawing 4, a strut (14) is constituted by two or more roll kneaders 30 arranged in parallel, ground dyeing liquid 12 is drawn and lifted by the roll 30, and the three-dimensional oil level 13 in alignment with the peripheral surface is formed. It is good for this roll 30 to use what has irregularity in a peripheral surface like the cylinder roll which consisted of a brush roll and a punching metal.

[0022] A field exoergic burner (combustion gas) and a field exoergic heater (electric heat) are used for the far-infrared generator 22. The calorific value per hour of the far-infrared generator 22 should just be before and after 45,000Kcal(s). although the field exoergic burner 22 is arranged with the ground dyeing equipment to illustrate towards front reverse side both sides of the pile textile which passes preheating equipment 23 -- the field exoergic burner 22 -- the front reverse side of a pile textile -- you may arrange only in any or one side

[0023]

[Example] A stock paste is prepared by prescription shown in [Table 1].

[0024]

[Table 1]

水溶性糊剤 (カルボキシメチルセルロース)	8.0 重量部
PH調整剤 (リンゴ酸)	0.5 重量部
還元防止剤 (塩素酸ソーダ)	1.5 重量部
水	90.0 重量部

[0025] The above-mentioned stock paste is used and a resist-printing paste is prepared by prescription shown in [Table 2].

[0026]

[Table 2]

元糊	6.5 重量部
撥水剤 (弗素樹脂系パーフルオロアクリレート)	1.0 重量部
非シリコン系脱気透過剤	5 重量部
染料 (C. I. ディスパーズ ブルー 60)	1 重量部
水	19 重量部

[0027] Dry heat treatment of the polyester-fiber pile textile (moquette) with a length [pile eyes 450 g/m² and pile length] of 3mm (the thickness of ground weave is included) is carried out for 3 minutes at 170 degrees C. The above-mentioned resist-printing paste is printed to a pile side with a rotary-screen printing machine (screen mesh of No. 600). Carry out dryness processing for 3 minutes at 145 degrees C, turn a pile side upwards, and ground dyeing liquid is prepared by prescription shown in [Table 3]. The oil level

of the dye liquor tub illustrated to drawing 1 which sank the round-head pipe (strut) by 1.5mm Fukashi under the oil level is passed. Carry out suction removal of the excessive ground dyeing liquid with the vacuum nozzle 19 from the rear face of a pile textile, and coating weight of ground dyeing liquid is made 105%. It lets it pass for 1 minute to the preheating equipment (heating temperature of 95**5 degrees C in respect of pile textile conveyance) which separated the far-infrared generating side exoergic burner of 600 degrees C of skin temperatures from the pile textile conveyance side 30cm, and put it in order up and down. After predrying, Furthermore, it lets it pass to a hot air drying equipment for 140 degree-Cx 3 minutes, a bone dry is carried out to it, and coloring processing is carried out for 160 degree-Cx 15 minutes with a steamer, and the back, reduction cleaning is carried out, and it depastes, rinses and dries. The commercial compound reducing agent was used for reduction cleaning. It is acute in the form case of the textile-printing pattern of the obtained pile textile, there are no muddiness and uneven dyeing of a hue in the textile-printing section and the non-printing section, and it was coloring finely. As a result of performing a xenon arc radiationproofing test for the textile-printing section and the non-printing section for 144 hours based on JIS-B and 7754, the textile-printing section showed the color fastness to light of the 3.5-4.5th class, and the non-printing section showed the color fastness to light of the 3rd more than class.

[0028]

[Table 3]

マイグレーション防止剤 (アクリル酸系重合体)	1 0.0 g/L
霜降り防止剤 (アクリル酸系重合体)	2.0 g/L
湿潤浸透剤 (アニオン・ノニオン配合物)	1.0 g/L
PH調整用酸剤	0.7 g/L
染料 (C. I. ディスパース イエロー 163)	8.3 g/L
染料 (C. I. ディスパース レッド 258)	3.8 g/L
染料 (C. I. ディスパース ブルー 60)	11.2 g/L
水	63.0 g/L

[0029]

[Effect of the Invention] Since it permeates being able to carry out ground dyeing of the pile front face and the pile root 17 of the non-printing section 18, and ground dyeing liquid 12 extruding the air inside a pile textile according to this invention without making ground dyeing liquid 12 completely adhere to the pile front face of the print section 15 Ground dyeing liquid 12 does not adhere superfluously, therefore **** by the mangle or the nip roll is not required, ground dyeing can be carried out without spots, ready hair processing is not required after ground dyeing, but it is not polluted by ground dyeing liquid 12, but the pile front face of the print section 15 is also colored skillfully.

[0030] There are no stain remnants in the fiber of the portion of the bottom which follows a part for the point of the pile to which printing paste adhered in the print section 15, since all are dyed ground dyeing liquid 12, the color of the print section is tintured with depth, the fine sight on the front face of a pile is not spoiled by the color of the pile root 17 which appears from the crack between piles, but the textile-printing pile textile which the mold time was sharp and was colored finely is obtained.

[Translation done.]

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CLAIMS

[Claim(s)]

[Claim 1] Pile textile textile printing characterized by putting a pile textile (16) on the oil level (13) of ground dyeing liquid, and making ground dyeing liquid ooze out to the nose of cam of the pile of the non-printing section (18) with which printing paste is not printed, without turning to the bottom the pile front face which printed the printing paste (11) which blended the water repellent, and sinking a pile front face into the bottom of the oil level of ground dyeing liquid (12).

[Claim 2] Pile textile textile printing given in the above-shown claim 1 which supports a pile textile (16) and prevents sedimentation down to the oil level on the front face of a pile with the strut (14) formed in the bottom of the oil level of ground dyeing liquid.

[Claim 3] Pile textile textile printing given in the above-shown claim 2 which irradiates far infrared rays and heats them to the pile textile (16) which turned the pile front face to the bottom and was pulled up from ground dyeing liquid (12).

[Claim 4] Pile textile textile printing given in the above-shown claim 3 which applies a vacuum nozzle (19) to the rear face of a pile textile while pulling up from ground dyeing liquid and irradiating far infrared rays.

[Translation done.]

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TITLE: PRINT DYEING FOR PILE FABRIC
PUBN-DATE: October 28, 1997

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N/A

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D06P005/12 , D06P005/20

ABSTRACT:

PROBLEM TO BE SOLVED: To obtain a pile fabric which is printed with a pattern of fast and bright colors by allowing the pile fabric to move on the surface of the base dyeing solution without sinking and to exude the base dyeing solution to the unprinted parts.

SOLUTION: A dye-proof sizing agent 11 containing a water-repellent agent is printed on a polyester pile fabric such as moquette 16 and heat-treated. Then, the fabric 16 is guided to the dyeing tank 21 containing a ground dye solution

12, as the pile face is upturned. The pile fabric is supported with a plurality of the supporting materials 14 below the liquid level 13 so that the fabric may not sink whereby the base dye solution 12 is exuded to the top end of the unprinted part 18 of the pile. Then the pile fabric 16 is brought into contact with vacuum nozzle 19 and pulled up from the dye solution tank 21, as the solution is removed by sucking. Then, the fabric is introduced into the preheating chamber 23 equipped with a far infrared ray generator 22 for preheating then heating in the color-developer to develop the color, subsequently washed, removed the sizing agent, washed with water and dried.

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TITLE: Textile printing for pile cloth,
etc. - comprises facing
the surfaces of the piles upwards,
placing the pile cloth
on liquid level of a ground dying
solution and bleeding
the ground dying solution

PATENT-ASSIGNEE: KAWASHIMA ORIMONO KK[KAOR]

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ABSTRACTED-PUB-NO: JP 09279486A

BASIC-ABSTRACT:

Textile printing comprises: (i) upwardly facing the surfaces of piles finished by printing using a printing sizing agent containing a water repellent; (ii) placing pile cloth on the liquid level of a ground dyeing solution without dipping the surfaces of the piles in the ground dyeing solution; and (iii) bleeding the ground dyeing solution as far as the extreme ends of the printing-free portions (printing sizing agent-free portions).

USE - The textile printing is applied to the pile cloth, including gigging cloth, double rashel pile woven cloth, a wilton carpet, tufted pile cloth.

ADVANTAGE - Ground dyeing is applied to the surfaces of the printing-free portions and the roots of the piles without sticking the ground dyeing solution to the surfaces of the printed portions. The ground dyeing solution is penetrated into the pile cloth with air in the pile cloth extruded. The results entail no excessive ground dyeing solution adhesion. The surfaces of the printing portions have no contamination caused by the ground dyeing solution, giving a sharp colour.

CHOSEN-DRAWING: Dwg.0/4

TITLE-TERMS: TEXTILE PRINT PILE CLOTH COMPRISE FACE SURFACE
PILE UP PLACE PILE
CLOTH LIQUID LEVEL GROUND DYING SOLUTION BLEED
GROUND DYING
SOLUTION

DERWENT-CLASS: F06 G05

CPI-CODES: F02-A03; F02-D; F02-G03; F03-C06; F03-F31;
F04-D04; G05-F;

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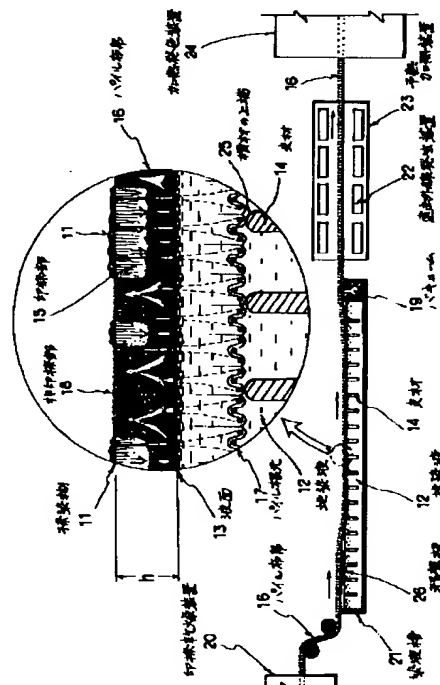
(74) 代理人 弁理士 千葉 茂雄

(54) 【発明の名称】 バイル布帛捺染法

(57) 【要約】 (修正有)

【課題】 バイル表面の毛並を揃える整毛処理を印捺前後に重複して2回行うことなく、又、防染糊による捺染模様を汚染することなく地染を行ってバイル根元を捺染模様の地色に着色し、バイル間の割れ目に現われるバイル根元の色彩によってバイル表面の美観が損なわれず、捺染模様が鮮やかに発色し、堅牢な捺染バイル布帛を得る。

【解決手段】 撈水剤を配合した捺染糊11を印捺したバイル表面を上側に向け、バイル表面を地染液12の液面下に沈めることなく、地染液の液面13にバイル布帛16を載せて、捺染糊の印捺されていない非印捺部18のバイルの先端まで地染液を滲出させるバイル布帛捺染法。



【特許請求の範囲】

【請求項1】 撈水剤を配合した捺染糊(11)を印捺したパイル表面を上側に向け、パイル表面を地染液(12)の液面下に沈めることなく、地染液の液面(13)にパイル布帛(16)を載せて、捺染糊の印捺されていない非印捺部(18)のパイルの先端まで地染液を滲出させることを特徴とするパイル布帛捺染法。

【請求項2】 地染液の液面下に設けた支材(14)によってパイル布帛(16)を支え、パイル表面の液面下への沈降を防ぐ前掲請求項1に記載のパイル布帛捺染法。

【請求項3】 パイル表面を上側に向けて地染液(12)から引き上げたパイル布帛(16)に遠赤外線を照射して加熱する前掲請求項2に記載のパイル布帛捺染法。

【請求項4】 地染液から引き上げて遠赤外線を照射する間において、パイル布帛の裏面にバキュームノズル(19)を当てる前掲請求項3に記載のパイル布帛捺染法。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、起毛布帛、モケット、ダブルラッシュパイル編布、ウルトンカーペット、タフテッドパイル布帛等のパイル布帛の捺染に関するものである。

【0002】

【従来の技術】パイル布帛の捺染は、パイル表面に捺染スクリーンから捺染糊を押し出して印捺(スキージング)するか、又は、ノズルから染液を噴射して行われる。

【0003】毛羽立った布帛には捺染糊が浸透し難いので、表面が毛羽で構成されるパイル布帛に印捺した捺染糊はパイル層に余り深くは浸透せず、パイル根元は捺染糊に着色されずに残るので、パイル布帛を折り曲げたときには、その未着色のパイル根元がパイルとパイルの間に露出してパイル表面の美観を損なうことになる。

【0004】ノズルから染液を噴射して行うスプレー捺染においては、染液が捺染糊に比して遙かに低粘に調製されているのでパイル層に深く浸透するが、それでもなおガイドロール等において折り返されて出来るパイルとパイルの間の割れ目にノズルを向けて染液を噴射しなければ、パイル根元に至るまで着色することは難しく、又、浸透し易くするために染液が低粘に調製されているが故に、印捺した染液が型際から滲出して捺染模様が不鮮明になり、型際が鮮鋭で複雑繊細な捺染模様を描出することは出来ない。

【0005】

【発明が解決しようとする課題】そこで、折り曲げた際にパイル間の割れ目から現われるパイル根元が目立たないようにするため、パイル根元を捺染模様の地色に着色

する方法が採られる。その一つの方法として、予め全体が地色に着色されたパイル布帛に、抜染剤と不拔性染料を配合した抜染糊を印捺し、抜染剤によってパイル表面の地色を脱色すると同時に不拔性染料によって所要の色彩に着色する着色抜染法が公知である。然し、使用し得る不拔性染料の種類は限られており、着色抜染によって所要の色彩、特に、パステルカラー調の色彩を表現することは難しく、色相に濁りが生じ、又、抜染剤は、繊維の物性を損なったり染色設備の腐食を招き、作業者の健康管理の上でも問題がある。

【0006】又、他の方法として、防染剤を配合した防染糊を印捺したパイル布帛を地染液に浸漬し、パイル表面を防染糊に配合した染料によって着色し、防染糊の付着していないパイル根元だけを地染液で着色する防染法が公知である。然し、防染糊の印捺箇所が、地染液が入り込まないように防染されているとは言え、毛羽立ったパイル布帛では防染糊もパイル層に浸透し難いので、印捺箇所のパイル繊維の1本1本を防染糊の皮膜によって完全に包み込むことは出来ず、防染糊の皮膜に包まれないパイル繊維の一部が地染液に着色され、その結果、防染糊による捺染模様が地染液に汚染され、色相に濁りが生じ、不鮮明なものとなる。

【0007】そして更に、捺染模様の型際を鮮鋭にするために、パイル表面の毛並を描え整毛処理を行ってから防染糊を印捺することになるが、パイル布帛を地染液に浸漬して行う浸染においては、浸漬した際にパイル布帛内部(繊維間)に地染液に囲まれて出来る気泡を追い出してパイル布帛内部に地染液を均一に浸透させるために、パイル布帛を地染液の中で幾度となく折り返ししたり揉む等の物理的刺激を強制的に加えることになるが、そうすると浸染後には毛並を描え直す整毛処理を再び行わなくてはならなくなるので、印捺前と浸染後の2回にわたって整毛処理を行わなくてはならなくなる。

【0008】

【発明の目的】そこで本発明は、パイル表面の毛並を描え整毛処理を印捺前後に重複して2回行うことなく、又、防染糊による捺染模様を汚染することなく地染を行ってパイル根元を捺染模様の地色に着色し、使用中にパイル間の割れ目から現われるパイル根元の色彩によって美観が損なわれず、捺染模様が鮮やかに発色し、堅牢な捺染パイル布帛を得ることを目的とする。

【0009】

【課題を解決するための手段】本発明に係るパイル布帛捺染法は、撈水剤を配合した捺染糊11を印捺したパイル表面を上側に向け、パイル表面を地染液12の液面下に沈めることなく、地染液の液面13にパイル布帛16を載せて、捺染糊の印捺されていない非印捺部18のパイルの先端まで地染液を滲出させることを特徴とするものである。

【0010】地染液の液面13にパイル布帛16を載せ

ると、地染液12は毛細管現象によってパイル先端まで滲出し、非印捺部18のパイル表面が地色に染色されるものの、防染糊を印捺した印捺部15では、そのパイル根元は地色に染色されるものの、防染糊11の有する撈水力に阻まれて地染液12がパイル表面にまでは上昇せず、印捺部15のパイル表面が地染液12に全く汚染されることなく、パイル根元17と非印捺部18のパイル表面が地染液12に染色されることになる。

【0011】このように非印捺部18のパイル表面が地染液に地染されるようにするには、地染液の液面13がパイル表面から1～3mm下がった位置に達するまでパイル根元17が地染液12に沈み込むようにパイル布帛16を地染液の液面13に載せるとよい。例えば、パイル長が2～5mmのモケットやダブルラッシュェルパイル編布では、パイル根元17を液面13の下に1～3mm沈める。

【0012】このようにパイル根元17を所要の深さまで地染液12に沈めるには、地染液の液面下に支材14を配置し、パイル表面が液面の下に沈み込まないように地染液中で支えるようにするとよい。従って本発明の第2の特徴は、地染液の液面下に設けた支材14によってパイル布帛16を支え、パイル表面の液面下への沈降を防ぐことにある。そのためには、支材14が液面下1～5mm沈むように地染液を自動供給し、或いは、浮力によって支材14が液面下1～5mm沈んだ位置で支えられるようにするとよい。

【0013】そのようにして毛細管現象によって地染液が上昇する過程では、非印捺部18のパイルの上端は、地染液12に塞がれない通気可能な開放状態になっているので、そのパイル繊維間に含まれる空気は、上昇する地染液12に押し出されることになり、浸染においてパイル布帛内部（繊維間）に地染液に囲まれて出来る気泡によって生じるような染斑は生じない。それ故に、本発明では、浸染の場合のように地染液をパイル布帛内部に均一に浸透させるための物理的的刺激をパイル布帛に加える必要がなく、その結果、パイル表面の毛並を乱すことなく地染され、地染後において格別な整毛処理を必要としない。

【0014】勿論そのためには、地染液が付与されたパイル布帛を、パイル表面を上に向けたまま加熱発色処理する。その場合、パイル布帛に遠赤外線を照射すると、遠赤外線の性質からしてパイル布帛は内部から加熱され、従って、熱風を当てる等して表裏から加熱する場合のように、パイル布帛内部の地染液が表裏に移動するマイグレーション現象による染斑は生ぜず、地染液が均一に発色して染斑のない地染が可能となる。従って本発明の第3の特徴は、パイル表面を上側に向けて地染液12から引き上げたパイル布帛16に遠赤外線を照射して加熱することにある。

【0015】又、本発明の第4の特徴は、そのように地

染液から引き上げて遠赤外線を照射する間において、パイル布帛の裏面にバキュームノズル19を当てることにあり、そうすることによって過剰な地染液の滴りをなくし、バキュームノズル19の吸引力を加減して地染液の付着量（ピックアップ量）を所要の付着量にすることが出来る。地染液の付着量は、概してピックアップ70～170%の範囲で設定すればよい。遠赤外線を照射して予備加熱した後は、常法に従って乾熱又は湿熱による発色処理を行い、脱糊・水洗・乾燥して仕上げる。その過程において、撈水剤は、捺染糊に含まれる水溶性樹脂（元糊）と共に除去される。サーモゾル法による発色処理は165～185℃の熱風にて3～5分間行い、スチーミング法による発色処理は160～180℃のスチーマーにて8～20分間行えばよい。発色処理後の還元洗浄は80℃前後で行う。

【0016】

【発明の実施の形態】捺染糊は、常法に従って元糊に染料を加え、更に撈水剤を加えて調製される。撈水剤には、パラフィン、ワックス、シリコン樹脂、弗素樹脂等を乳化剤と共に水を分散させたエマルジョン型の市販品を使用することが出来る。その場合、加熱処理を必要とするシリコン樹脂系撈水剤や弗素樹脂系撈水剤を使用する場合、撈水剤に撈水効果を発揮させるに必要な温度において、捺染糊に含まれる染料の発色温度以下の温度で印捺した捺染糊を加熱し乾燥させてから地染液の液面にパイル布帛をおく。その加熱は、135～145℃の熱風で行えばよい。

【0017】図1は、本発明の地染装置を図示し、捺染糊の印捺・乾燥装置20、地染液を貯えた染液槽21、バキューム装置19、遠赤外線装置22を上下に配置した予備加熱装置23、加熱発色装置（スチーマー）24の順に並んでいる。捺染糊の印捺には、ロータリースクリーン捺染機、フラットスクリーン捺染機、ローラー捺染機などが使用される。染液槽内には、縦長断面の横材14が一定間隔で水平に並べられている。地染液は、横材の上端25が液面13から2～3mm沈むように染液槽21に自動供給されており、染液槽21の上を通過するパイル布帛16は、自重によってパイル表面から1～2mmの深さまで沈んで横材14に支えられる。26は、邪魔板である。パイル布帛16と地染液12のとの接触時間、即ち、パイル根元17を液面下に沈める時間は、パイル布帛16の搬送速度によるほか、邪魔板26を移動し、邪魔板26とバキューム19との距離を変えて調整することも出来る。

【0018】図1において、水平に並べた横材がパイル布帛の沈み込む深さを規制する支材14を構成し、パイル布帛を載せる地染液の液面13は水平になっているが、染液槽の底面や縁材を支材とすることも出来、又、液面は立体的なものであってもよい。

【0019】図2は、底板27をもって支材（14）を

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構成した染液槽を図示し、エアータブの如く、底板27には染液供給管31から送られる地染液12を湧出する湧出口28が多数設けられており、パイル布帛16は、その湧出口28から湧出する地染液12に浮き上げられて底面を滑るように移動するようになっている。このような染液槽では、底面を傾斜させれば、パイル布帛は傾斜して流れる地染液の液面を滑るように移動することになる。

【0020】図3に図示する染液槽は、高さが異なる数枚の堰板29によって数区画に仕切られており、パイル布帛は各区画の液面に接すると共に、各堰板29を越える液面13の下にパイル根元17が沈み、堰板29に支えられて染液槽21を通過するようになっている。

【0021】図4に図示する染液槽では、平行に配列された複数本の回転ロール30によって支材(14)が構成され、地染液12は、ロール30に汲み揚げられ、その周面に沿った立体的な液面13を形成している。この*

水溶性糊剤(カルボキシルメチルセルロース)	8.0重量部
PH調整剤(リンゴ酸)	0.5重量部
還元防止剤(塩素酸ソーダ)	1.5重量部
水	90.0重量部

【0025】上記の元糊を使用し、〔表2〕に示す処方によって防染糊を調製する。 ※【0026】

元糊	6.5重量部
撥水剤(弗素樹脂系パーフルオロアクリレート)	1.0重量部
非シリコン系脱気浸透剤	5重量部
染料(C. I. ディスパース ブルー 60)	1重量部
水	19重量部

【0027】パイル目付450g/m²・パイル長さ3mm(地組織の厚みを含む)のポリエステル繊維パイル布帛(モケット)を170℃にて3分間乾熱処理し、ロータリースクリーン捺染機(スクリーンメッシュ600番)にて上記の防染糊をパイル面に印捺し、145℃にて3分間乾燥処理し、パイル面を上に向け、地染液が〔表3〕に示す処方によって調製され、液面下1.5mmの深さまで丸パイプ(支材)を沈めた図1に図示する染液槽の液面を通過させ、余剰の地染液をパイル布帛の裏面からバキュームノズル19で吸引除去して地染液の付着量を105%にし、表面温度600℃の遠赤外線発生面発熱バーナーをパイル布帛搬送面から30cm離して上下に並べた予備加熱装置(パイル布帛搬送面での加★

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*ロール30には、ブラシロールやパンチングメタルで構成されたシリンダーロールのように、周面に凹凸のあるものを用いるとよい。

【0022】遠赤外線発生装置22には、面発熱バーナー(燃焼ガス)や面発熱ヒーター(電熱)が使用される。遠赤外線発生装置22の1時間当たりの発熱量は45,000Kcal前後であればよい。図示する地染装置では、予備加熱装置23を通過するパイル布帛の表裏両面に向けて面発熱バーナー22が配置されているが、面発熱バーナー22はパイル布帛の表裏何れか片側にだけ配置してもよい。

【0023】

【実施例】〔表1〕に示す処方によって元糊を調製する。

【0024】

〔表1〕

★熱温度95±5℃)に1分間通して予備乾燥後、更に、熱風乾燥機に140℃×3分間通して完全乾燥し、スチーマーにて160℃×15分間発色処理して後、還元洗浄し、脱糊・水洗・乾燥する。還元洗浄には、市販の複合還元剤を使用した。得られたパイル布帛の捺染模様の形際は先鋭であり、捺染部と非捺染部に色相の濁りや染斑はなく、綺麗に発色していた。その捺染部と非捺染部を、JIS-B・7754に基づき144時間キセノンアーク耐光性試験を行った結果、捺染部は3.5~4.5級の耐光堅牢度を示し、非捺染部は3級以上の耐光堅牢度を示した。

【0028】

〔表3〕

7	マイグレーション防止剤（アクリル酸系重合体）	10.0 g/L	8
	霜降り防止剤（アクリル酸系重合体）	2.0 g/L	
	湿潤浸透剤（アニオン・ノニオン配合物）	1.0 g/L	
	PH調整用酸剤	0.7 g/L	
	染料（C. I. ディスパース イエロー 163）	8.3 g/L	
	染料（C. I. ディスパース レッド 258）	3.8 g/L	
	染料（C. I. ディスパース ブルー 60）	11.2 g/L	
	水	63.0 g/L	

【0029】

【発明の効果】本発明によると、印捺部15のパイル表面に全く地染液12を付着させることなく非印捺部18のパイル表面とパイル根元17を地染することが出来、地染液12がパイル布帛内部の空気を押し出しつつ浸透するので、地染液12が過剰に付着せず、従って、マングルやニップロールによる絞液を要せず斑なく地染することが出来、地染後に整毛処理を要せず、印捺部15のパイル表面も地染液12に汚染されず鮮やかに発色する。

【0030】印捺部15において、捺染糊の付着したパイルの先端部分に続く下側の部分の繊維に染残しなく、全て地染液12に染色されるので、印捺部の色彩が深みを帯び、パイル間の割れ目から現われるパイル根元17の色彩によってパイル表面の美観が損なわれず、型際が鮮鋭で綺麗に発色した捺染パイル布帛が得られる。

【図面の簡単な説明】

【図1】本発明に係る地染装置の側面図であり、その一部を丸く囲んで拡大して図示している。

【図2】本発明に係る染液槽の側面図であり、その一部を丸く囲んで拡大して図示している。

【図3】本発明に係る染液槽の側面図であり、その一部を丸く囲んで拡大して図示している。

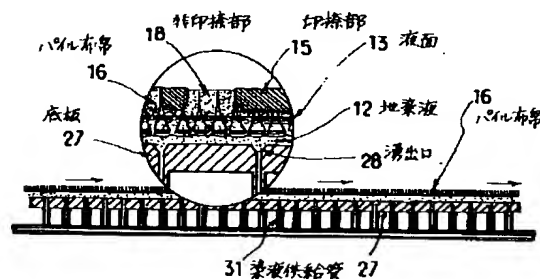
【図4】本発明に係る染液槽の側面図であり、その一部*

*を丸く囲んで拡大して図示している。

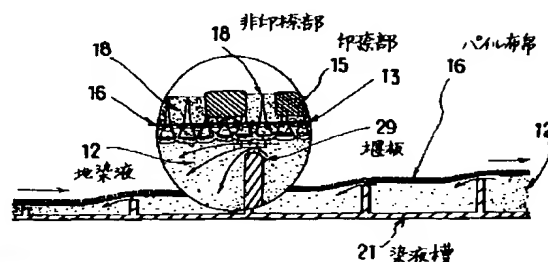
【符号の説明】

- 11 捺染糊
- 12 地染液
- 13 液面
- 14 支材（横材）
- 15 印捺部
- 16 パイル布帛
- 17 パイル根元
- 18 非印捺部
- 19 バキュームノズル
- 20 印捺乾燥装置
- 21 染液槽
- 22 遠赤外線発生装置
- 23 予備加熱装置
- 24 加熱発色装置
- 25 横材の上端
- 26 邪魔板
- 27 底板
- 28 湧出口
- 29 堰板
- 30 ロール
- 31 染液供給管

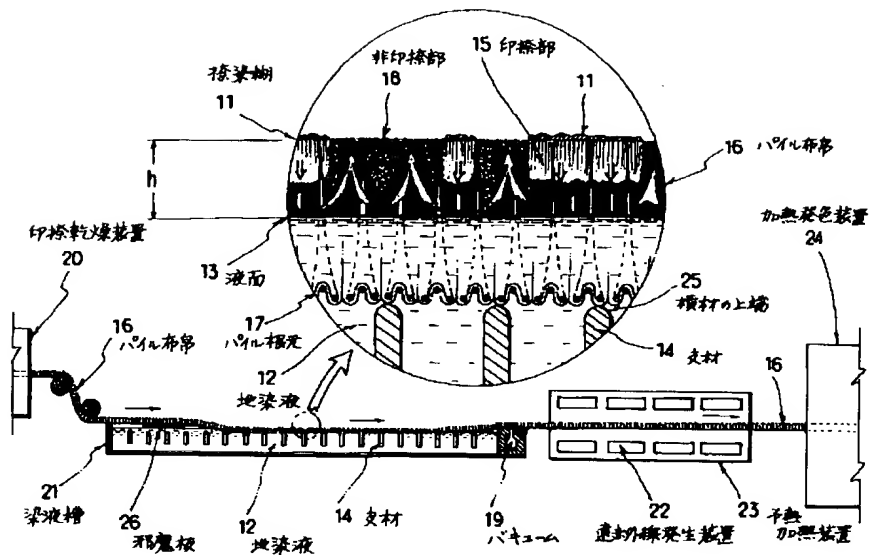
【図2】



【図3】



【図1】



【図4】

